



National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
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Triple play

The STS-76 crew documents the third docking of a shuttle to the Russian Mir Space Station. Photos on Page 3.



Science Fair

JSC employees took time out last month to judge Science Fair projects. Story on Page 4.

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Endeavour at pad, on track for mid-May launch

By James Hartsfield

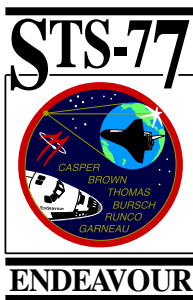
Endeavour was rolled out to Launch Pad 39B at Kennedy Space Center on Tuesday in preparation for STS-77, which remains on track for a mid-May liftoff.

Endeavour was moved out of the Vehicle Assembly Bldg. at 9 a.m. Tuesday where it had been mated with the STS-77 solid rockets and fuel tank, and the shuttle was at the pad by 3 p.m. Late this week, technicians completed a flight readiness test of *Endeavour's* main engines, a check of the engines' electrical connections and pneumatic valves. A standard leak check of the main engine plumbing is scheduled for Monday.

Endeavour's crew for STS-77—Commander John Casper; Pilot Curt Brown; and Mission Specialists Andy Thomas, Dan Bursch, Mario Runco and Marc Garneau—will fly to KSC on Monday to begin a dress rehearsal countdown. The Terminal Countdown Demonstration Test is set for Tuesday and Wednesday.

Shuttle managers plan to meet May 7 for a Flight Readiness Review, following which an official launch date will be announced.

Meanwhile, *Columbia* is in the Bay 2 shuttle hangar being readied for a late June launch



on STS-78, the Life and Microgravity Sciences-1 mission. Early this week, the three main engines were installed in *Columbia*. On Monday, the LMS-1 Spacelab will be installed in the transport canister, moved to *Columbia's* processing hangar and installed into the shuttle cargo bay on Tuesday.

Atlantis completed a ferry flight back to KSC from Edwards Air Force Base atop the 747 Shuttle Carrier Aircraft with a landing in Florida at 12:41 p.m. CST April 12. *Atlantis* was demated from the SCA that evening, and it was

inside the Bay 1 processing hangar by early Saturday morning. Technicians opened the payload bay doors on Monday and removed the ferry flight tail cone on Tuesday. The Spacehab module was removed from the cargo bay on Thursday.

Throughout the week, post-flight inspections of *Atlantis* have been under way, and work has begun to pinpoint the source of a hydraulic fluid leak in the aft compartment of *Atlantis* that was noted during STS-76. *Atlantis'* three main engines will be removed April 29. *Atlantis'* next mission, in August, will be the fourth shuttle-Mir docking, STS-79, retrieving Astronaut Shannon Lucid.



JSC photo by Benny Benevides

Russian dancers were one of the featured attractions at the STS-1 anniversary party. More than 800 JSC employees enjoyed music, dancing and Space Center Houston attractions. The event was a celebration of several milestones including the fifteenth anniversary of STS-1, the 35th anniversary of Yuri Gagarin's flight on Vostok 1 and the third year of the sister city relationship between the city of Nassau Bay and Star City, Russia.

Shuttle contracts take initial step in consolidation

By James Hartsfield

NASA and its major space shuttle contractors took an important step last Friday toward consolidating shuttle operations and processing work under a single prime contractor.

Two novation agreements signed Friday that became effective over last weekend designate United Space Alliance as the prime contractor for both shuttle processing work currently performed by Lockheed Space Operations Company at the Kennedy Space Center and shuttle operations work currently performed by Rockwell Space Operations Company JSC. United Space Alliance is a joint venture announced last year by Rockwell International Corp. and Lockheed Martin Corp. in preparation to compete for NASA's request for a single space flight operations contract.

In November 1995, NASA an-

nounced its decision to pursue a single space shuttle operations contract on a non-competitive basis with USA. The novation activities are designed to ease the transition to a single contract. Together, Rockwell and Lockheed Martin already hold almost 70 percent of the dollar value of all space shuttle-related contracts.

"This agreement basically constitutes a name change for contracts that will essentially remain intact for the near term," said Space Shuttle Program Manager Tommy Hollo-way. "However, it is significant in that it is the first phase of a transition to a single contract and it constitutes the first official contract between USA and NASA. This allows us to get an early start on implementing a single space flight operations contract approach, and it supports our requirement that the transition to that contract is efficient

Please see **NOVATION**, Page 4

Mir crew celebrates first human in space, STS-1

By Kyle Herring

The Mir-21 crew spent last week conducting experiments, monitoring others and performing some minor maintenance procedures as part of routine activities on the Russian Mir Space Station. The week included a number of television downlinks of the crew talking with family members, school children and reporters about life on an orbiting laboratory.

The week ended with the crew celebrating Cosmonautics Day and the 15th anniversary of the first space shuttle launch. Family members and friends talked with the crew on a two-way video link to celebrate the 35th anniversary of the first human in space—

Yuri Gagarin's flight in 1961. The cosmonauts also recognized last Friday's anniversary of STS-1.

This week the crew continued work with the Optizon Liquid Phase Sintering Experiment, or OLIPSE. Sample processing has continued nearly every day with the crew producing metallurgical samples in vials heated in a high temperature furnace on Mir.

Acceleration measurements are being taken aboard the station at various locations to help scientists determine the best and worst locations for experiment



development. Thus far, eight eggs have been fixated and Cosmonaut Researcher

Shannon Lucid reported seeing embryo development in some eggs.

Last Thursday, Commander Yuri Onufrienko, Flight Engineer-1 Yuri Usachev and Lucid took part in two press conferences—one with Russian media and one with American media—to discuss the mission, life in space and the anniversaries. Questions during the Russian press conference ranged from where they sleep to what language they speak on the station. That question elicited a joking response from Usachev, who said "Mainly Russian, but we try to learn more English words so Shannon won't forget her

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NASA Road 1 work begins in May

Long-awaited project to improve access to JSC, Clear Lake area

The Texas Department of Transportation recently awarded a contract to begin work on the widening of NASA Road 1 in front of JSC. Survey crews already are marking the edges of the new right-of-way and underground utilities.

Construction activities on this \$16 million first phase of the project will begin in May. Phase 1 includes construction of a six-lane undivided roadway with continuous center left turn lane from just east of Clear Lake Park to Space Center Blvd. A three-lane-wide new bridge will be constructed over Clear Lake alongside

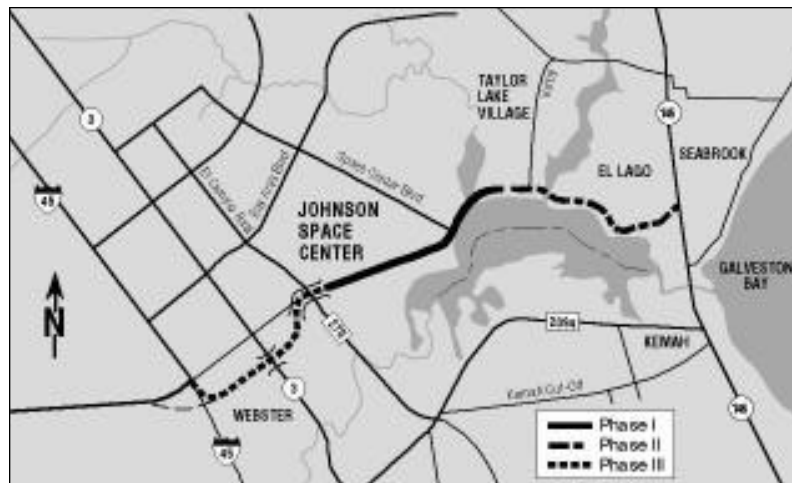
the present Mud Lake bridge to avoid damaging the stone wall in front of the former Jim West Mansion which is now on the National Register of Historic Buildings.

At Space Center Blvd., the roadway becomes divided with a broad, landscaped median and protected left turn lanes. Near St. John's Medical Center, the roadway becomes eight lanes wide with a landscaped median until just west of Space Center Houston. At that point the landscaped median terminates and the eight-lane roadway becomes undivided with a continuous

center left turn lane. At Nassau Bay Drive the roadway will transition back to the present four lane roadway as it approaches the Cow Bayou bridges.

The portion of the project in front of JSC includes a highly landscaped median and hike-bike trails. Both the City of Nassau Bay and the Clear Lake Chamber of Commerce are reviewing proposals for monument signs and other indicators of this area's aerospace heritage that can be included in the landscaped median near JSC.

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Road work on NASA Road 1 will be conducted in three phases during the next three years. Phase 1 is set to begin next month. Phase 2 will begin in 1997 and Phase 3 in 1999.